TAMM, I.Ye., akademik

Physics of elementary particles; present-day status and prospects. Priroda 54 no.6:6-16 Je '65. (MIRA 18.6)

L 63578-65 EWT(m)/T/EWA(m)-2
ACCESSION NR: AP5012190

UR/0030/65/000/004/0030/0041

AUTHOR: Tamm, I. Ye. (Academician)

TITLE: Contemporary state of elementaty particle physics

SOURCE: AN SSSR. Vestnik, no. 4, 1965, 30-41

TOPIC TAGS: elementary particle, particle physics, nucleus, neutrino, neutron, positron, antiparticle, meson, electron spin

ABSTRACT: A state of the art review is made of theoretical and experimental developments in elementary particle physics. The theoretical part is reviewed briefly, where the inadequacy of the present state of relativistic quantum theory is underlined and it is hoped that the inaccurate "classical" wave and particle concepts will be replaced soon with more suitable ideas. The experimental part starts with a historical review of the various particles discovered in chronological order: first the neutron and the positron, then the neutrino with its great significance in the field of astrophysics, and, finally, the mesons and the antiparticles. Experimental studies with antiparticles show the validity of the combined inversion hypothesis which asserts the invariance of laws during transition from matter to antimatter. Along with this invariance there is

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L 63576-65
ACCESSION NR: AP5012190

discussed the problem of parity nonconservation with the advent of the new weak and strong interaction forces and the violation of singularity invariance. The case of stable and unstable particles is discussed where the former corresponds to particles, such as the electron, that do not decay into lighter particles along the conservation laws. With the advent of resonance techniques, lifetime of unstable particles that can be measured has been reduced from 10^{-16} to 10^{-23}sec. In recent years work has been concentrated on studying the symmetry properties of elementary particles using the mathematical tools of group theory. Here, interest is centered around the internal properties of the particles such as the mass, charge, orbital moments, and the spin. This has opened the possibilities of grouping elementary particles into families according to their properties of symmetry. This in turn can help scientists to locate missing particles where properties can be estimated from the group characteristics. The situation may be considered to be analogous to the periodic table for chemical elements. In conjunction with this, some efforts have been made to include internal degrees of freedom of particles in a relativistic motion in space. It is contended that high speed computers coupled with high energy accelerators will help to crystallize the elementary particle world into a coherent picture with possible new applications in the field of medicine.

ASSOCIATION: none
Card 2/3

L 63578-65
ACCESSION NR: AP5012190

SUBMITTED: 00 ENCL: 00 SUB CODE: NP

NO REF SOV: 000 OTHER: 000

Card 3/3

TAMM, I.Ye.

Characteristics of the work of Leonid Isaakovich Mandel'shtam, 1879-1944. Usp. fiz. nauk 87 no.1:3-7 S '65. (MIRA 18:9)

TAMM, I.Ye.

Width of shock waves of great intensity. Trudy Fiz. inst. 29:239-249 '65. (MIRA 18:8)

TEXL, A.; PROCHAZKOVA-FRANKOVA, H.; TAMM, J.

Effect of tannin on hemorrhage and Quick's prothrombin time.
Scr. med. fac. med. Brunensis 36 no.5:249-257 '63.

1. Farmakologicky ustav lekarske fakulty university J.E. Purkyne v Brne. Vedouci: MUDr. Josef Sajner, C.Sc.
(TANNINS) (PROTHROMBIN TIME) (HEMORRHAGE)
(INJECTIONS, INTRAVENOUS)
(INJECTIONS, SUBCUTANEOUS)

TAMM, K.

Experiences in mechanizing plant cultivation. p. 284.

SOTSIALISTLIK POLLUMAJANDUS. (Pollumajanduse Ministeerium)
Tallinn, Estonia. Vol. 13, no. 6, June 1958.

Monthly list of East European Accessions (EEAI) Vol. 9, no. 1, Jan. 1960.

Uncl.

TAMM, M. I.

Algebra

Dissertation -- "Nilpotent Algebras in Connection With Investigations of Molin."

CAnd Phys-Math Sci, Tartu State U, Tartu, 1953. (Referativnyy Zhurnal -- Matematika, Moscow, Mar 54).

SO: SUM 213, 1954

TAMM, N. S. Cand Chem Sci

Dissertation: "Investigation of Systems: Potassium Fluoride-Beryllium Fluoride-Water; Rubidium Fluoride-Beryllium Fluoride-Water." 13/10/50

Moscow Order of Lenin State U imeni M. V. Lomonosov

SO Vecherniaya Moskva
Sum 71

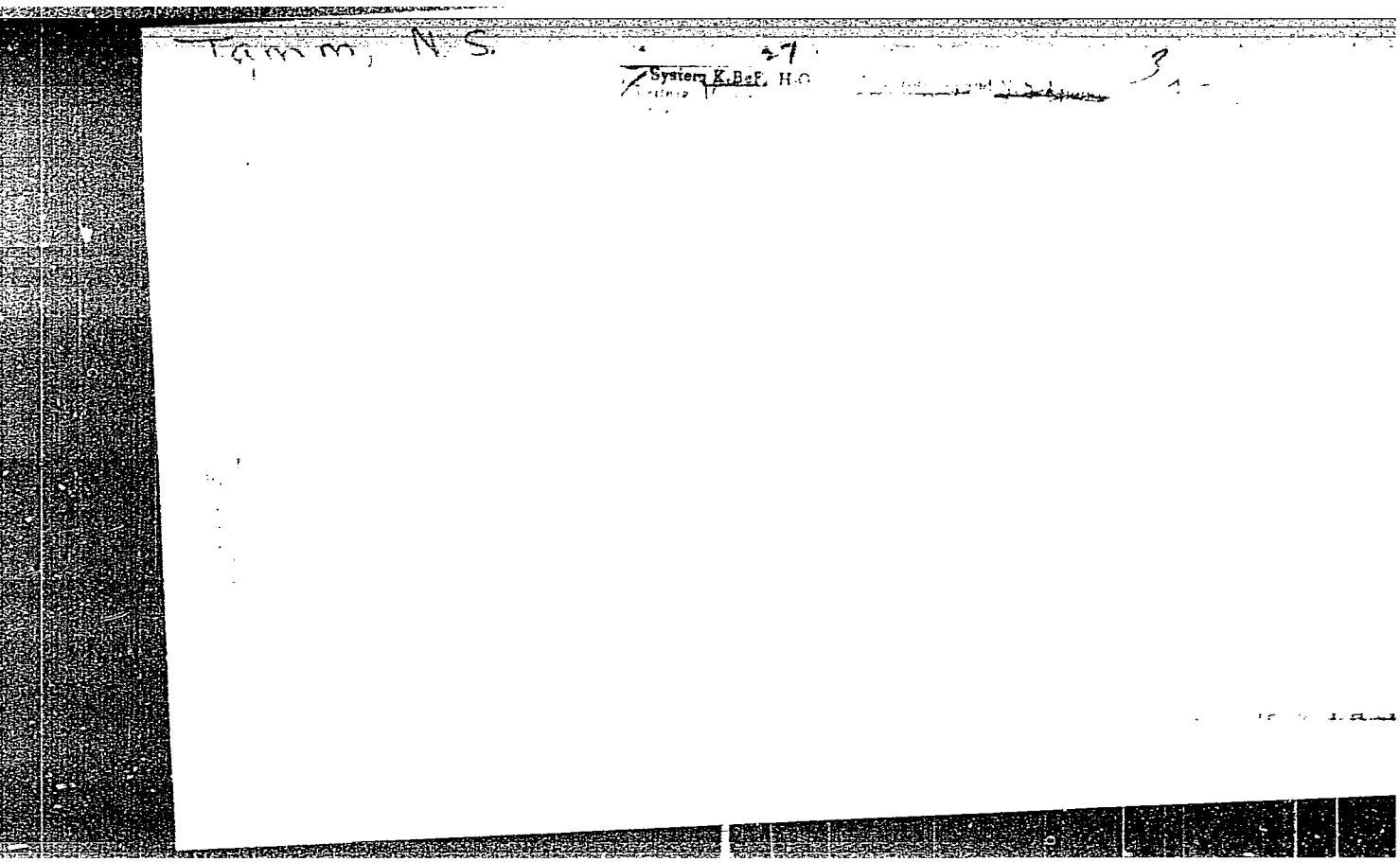
TAMM, N. S., NOVOSELOVA, A. V., and VOROB'YEVA, O. I.

"Solubility isotherm in the System: $KF-BeF_2-H_2O$ at 25°C.", Khimiya Redkikh Elementov, No. 2, P 3, 1955.

The solubility in the above system was investigated. The following solid phases were found: $KF.2H_2O$; $K_2Be F_4$; $KBeF_3$ and $K Be_2F_5$, x-ray power photographs of the last three salts were taken. $K_2F_4Be_4$ is soluble in water without decomposition while $KBeF_3$ and KBe_2F_5 dissolve with decomposition, but can be obtained from aqueous solutions containing a certain excess of berillium flouride.

Moscow State U.

SO: D-413171



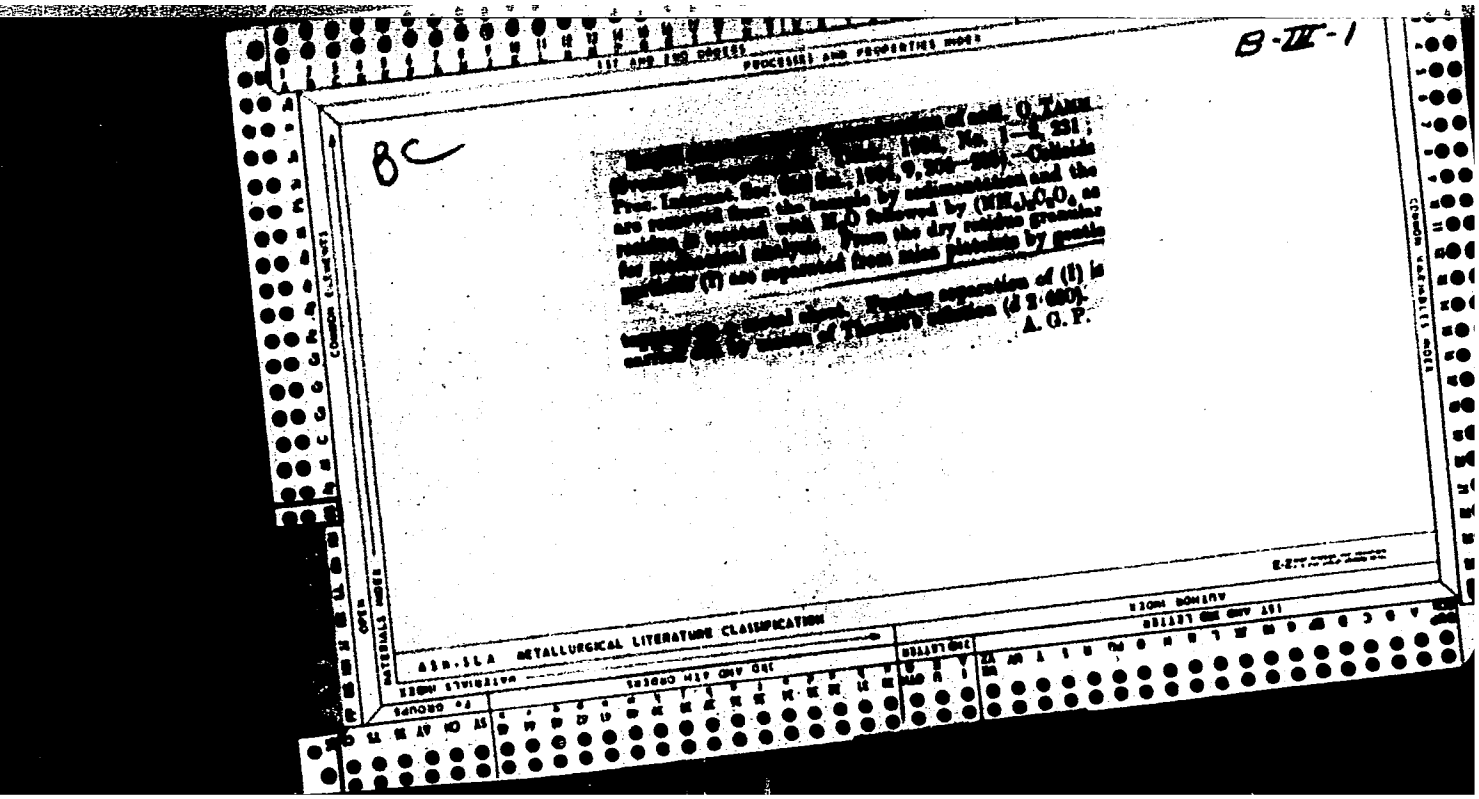
TAMM, N.S.; NOVOSELOVA, A.V.

The system RbF --BeF_2 -- H_2O at 25°. Zhur.neorg.khim. 2 no.6: 1428-1431 Je '57. (MIRA 10:10)
(Rubidium fluoride) (Beryllium fluoride)
(Water)

BUSIAYEV, Yu.A.; GUSTYAKOVA, M.P.; TAMM, N.S.

Reaction of beryllium fluoride with hydrogen fluoride in the presence of methyl alcohol. Zhur.neorg.khim. 11 no.1:156-159 Ja '66. (MIRA 19:1)

1. Institut obshchey i neorganicheskoy khimii imeni N.S.Kurnakova AN SSSR. Submitted July 25, 1964.



TAMM, O.

"Use of fluorides for the cure of ascarlasis in horses."

p. 549 (Sotsialistlik Pollumajandus) Vol. 12, no. 12, Dec. 1957
Tallinn, Estonia

SO: Monthly Index of East European Accessions (EEAI) LC. Vol. 7, no. 4, April 1958

TAMM, O.

Treating umbilical hernia on a foal by bandaging. p. 128.

SOTSIALISTLIK POLLUMAJANDUS. (Pollumajanduse Ministeerium) Tallinn, Estonia. Vol. 13, no. 3, March 1958.

Monthly List of East European Accessions (EEAI) LC, Vol. 8, no. 11, November 1959.

Uncl.

TAMM, O.

Caution in feeding sweet-clover ensilage of bad quality. p. 271.

SOTSIALISTLIK POLLUMAJANDUS. (Pollumajanduse Ministeerium)
Tallinn, Estonia. Vol. 13, no. 6, June 1958.

Monthly list of East European Accessions (EEAI) Vol. 9, no. 1, Jan. 1960.

Uncl.

TALM, R.K.

Seeds

Influence of seed-plant planting area on the seed yield. Sad i og., no. 4, 1952.

9. Monthly List of Russian Accessions, Library of Congress, JUNE 1952 Unclassif

1. TUM, R. Y.

2. USSR (600)

4. Crocus

7. Croci on the lawn, Sad i og. No.2, 1953.

9. Monthly List of Russian Accessions, Library of Congress, June 1953. Unclassif

TAMM, R.K.

Arrival and nesting of starlings in Jõgeva, Estonian S.S.R.
Trudy Probl. i tem. sov. no.9:161-168 '60. (MIRA 13:9)

1. Iygevskaya gosudarstvennaya selektsionnaya stantsiya.
(Jõgeva--Starlings)

M-3

USSR/Cultivated Plants - Potatoes. Vegetables. Melons.

Abs Jour : Ref Zhur - Biol., No 7, 1958, 29789

Author : Tamm, V.T.
Inst :
Title : The Potato in the Estonian SSR.

Orig Pub : Kartofel', 1957, No 4, 15-17.

Abstract : No abstract.

Card 1/1

M

COUNTRY : USSR

CATEGORY : Cultivated Plants. Potatoes. Vegetables. Cucurbits.

ABS. JOUR. : Ref Zhur-Biologiya, No. 1, 1959, No. 1657

AUTHOR : Tomm, V.

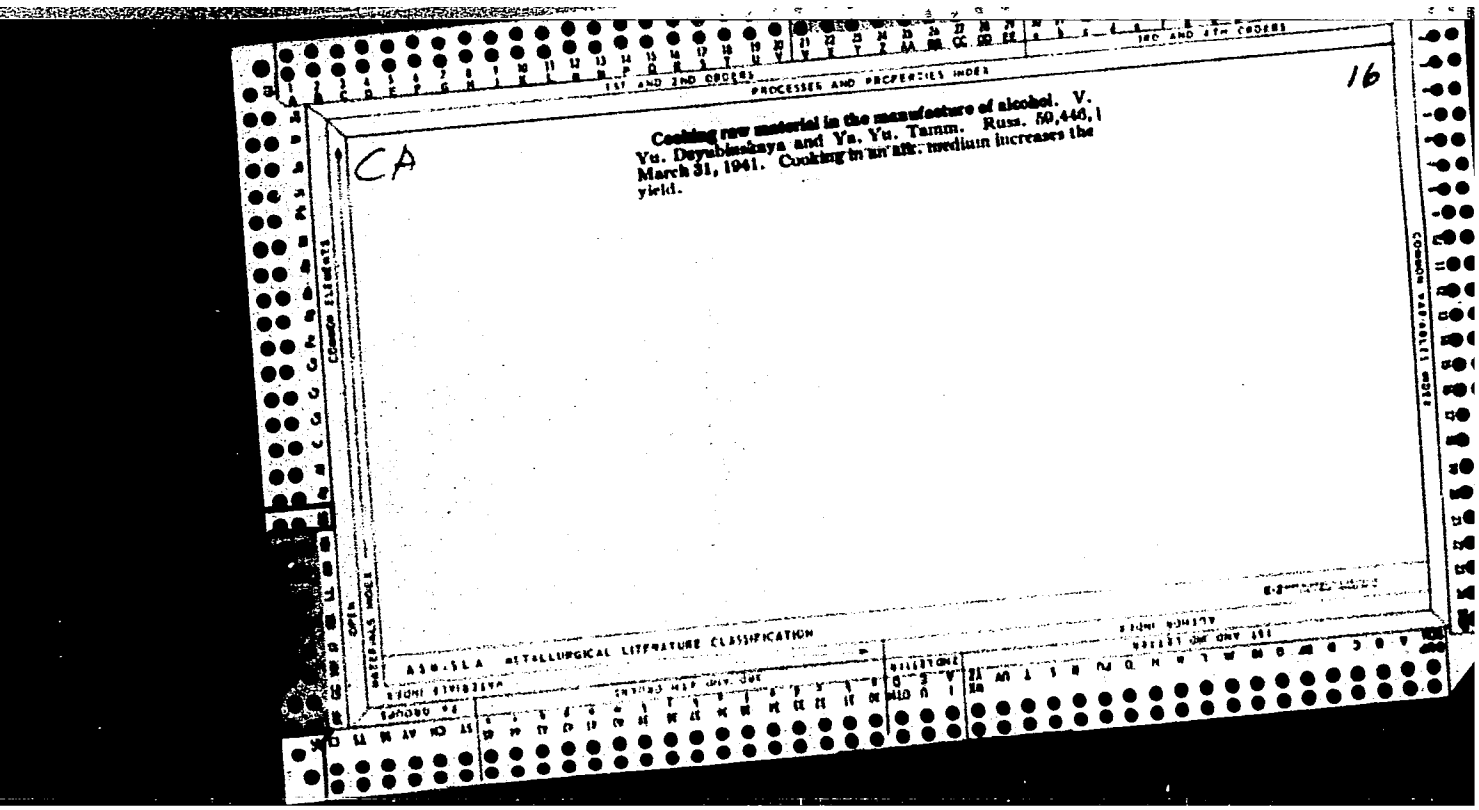
INST. :

TITLE : The Effect of Bed Area Dimensions on the Crop and Quality of Potato Tubers.

ORIG. PUB. : Sots. pollumajandus, 1958, No.4, 158-160

ABSTRACT : No abstract.

CARD: 1/1



TAMM, Ye. I.

2852
PHOTOPRODUCTION OF NEUTRAL π MESONS FROM DEUTERONS. A. S. Belousov, A. V. Kutsenko, and E. L. Tamm. Izvest. Akad. Nauk S.S.S.R. Ser. Fiz. 19, 605-8(1955) Sept.-Oct. (In Russian)

The cross sections for photoproduction of π^0 mesons from d, He^4, and C^{12} and other nuclei, with or without disintegration of the nucleus, have been proven to be of the same magnitude. The experimental studies of the photoproduction of π^0 mesons from deuterons: $\gamma + d \rightarrow \begin{cases} d + \pi^0 \\ p + n + \pi^0 \end{cases}$, made with the γ rays of the 250-Mev synchrotron, gave similar cross sections for both reactions, confirming the hypothesis of the π-meson field isotropic invariability. (R.V.J.)

TAMM, Ye I.

USSR/ Physics - π Mesons

Card 1/1 Pub. 22 - 18/54

Authors : Belousov, A.S.; Kutsenko, A. V.; and Tamm, Ye. I.

Title : The photo-generating process of π^0 mesons on deuterons

Periodical : Dok. AN SSSR 102/5, 921-923, June 11, 1955

Abstract : The photo-generating of neutral (π^0) mesons on deuterons was investigated. The following reactions were conducted $\gamma + d \rightarrow \begin{cases} d + \pi^0, \\ p + n + \pi^0. \end{cases}$

The experiments were intended to prove the hypothesis of isotopic invariance. Four references: 1 USA and 3 USSR (1952-1954). Diagram; graph.

Institution : The Acad. of Sc., USSR, P. N. Lebedev Physical Institute

Presented by : Academician V. N. Kondrat'ev, February 17, 1955

TAMM, Ya.I., BELOUSOV, A.S., POPOVA, V.M., SEMASHKO, N.G., SHITOV, E.V., VEKSLER, V.I., YAGUDINA, F.R.

"Photoproduction of Pions Complex Nuclei," paper presented at CERN Symposium, 1956, appearing in Nuclear Instruments, No. 1, pp. 21-30, 1957

CERN - Symposium on High Energy Accelerators and Pion Physics, Geneva, 11-23 June 1956

TAMM, E.I.

PA - 2331

AUTHOR: BELOUSOV,A.S., TAMM,E.I., SHITOV,E.V.

TITLE: Photoproduction of π^0-Mesons on Complex Nuclei. (Fotorozhdeniye π^0-mezonov na slozhnykh yadrakh, Russian).

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol 112, Nr 6, pp 1017-1019, (U.S.S.R.).

Received: 4 / 1957 Reviewed: 5 / 1957

ABSTRACT: The scheme of the experimental ordre is illustrated. Measurements were carried out on the sychrotron of the Physical Institute of the Academy of Science of the U.S.S.R. A bundle of the γ-rays of the synchrotron was collimated, after which it impinged on the target to be investigated. The γ-quanta originating from the decay of the neutral pions were recorded by means of a telescope consisting of four scintillation-counters. One counter was connected in anti-coincidence and three in conincidence. All counters contained liquid scintillators. (a solution of terphenyl in oxylol) Scintillations were recorded by means of a photomultiplier FEU - Measurements were carried out with an energy of 265 MeV on targets of Li, C, Al, Cu, Cd, Pb, and with an energy of 200 MeV on the same targets with the exception of Li. Measuring results a illustrated in form of a diagram: At the energy of 265 MeV all points within the range of measuring accuracy (3%) are located on the curve corresponding to the dependence $\sigma \sim A^{2/3}$. At 200 MeV the rule $\sigma \sim A^{2/3}$ holds good with an accuracy of 10%, and only the point for Pb lies above the curve. This deviation may be due to

Card 1/2

Photoproduction of π^0-Mesons on Complex Nuclei.

the contribution of the THOMSON scattering on the nuclei the cross section of which depends considerably on the nuclear charge number of the material of the target. The same reason prevented the measuring of the cross section of the photoproduction of neutral pions on nuclei (at energies fo the gamma-rays which are near the threshold of the photoproduction of the mesons) by recording the mesons by means of the individual gamma quanta of the decay. According to the results obtained the character of the dependence of the cross section of the production of neutral pions on nuclei of the nuclear charge number remains unchanged at energies of 310, 265, and 200 MeV. The maximum of the energy spectrum, however, shifts from 100 to 20 MeV. The results obtained cannot be explained by a reabsorption of the neutral pions produc in the interior of the nuclei. A rival process probably exists which suppresses the production of mesons within the nuclei and which leads to a production of mesons on the surface.
(2 illustrations).

ASSOCIATION: Not given.
PRESENTED BY: Member of the Academy A.P.ALEKSANOROV.
SUBMITTED: 28.9.1956
AVAILABLE: Library of Congress.

Card 2/2

21 (0)

AUTHORS: Belousov, A. S., Rusakov, S. V., Tamm, Ye. I. SOV/56-35-2-7/60

TITLE: The Photoproduction of Slow π^0-Mesons on Complex Nuclei (Fotoobrazovaniye medlennykh π^0-mezonov na slozhnykh yadrakh)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol 35, Nr 2, pp 355-363 (USSR)

ABSTRACT: The authors investigate the dependence of the cross section for the photoproduction of slow pions ($E_\pi \sim 10$ MeV) on the atomic number of the target nuclei. As shown by a number of earlier papers, it holds that $\sigma \sim A^{2/3}$ and $\sigma \approx \sigma_0 \eta \left[3\lambda/4r_0\right] A^{2/3}$ (Refs 1 - 8), where σ_0 is the meson-production cross section on the free nucleon; the factor η is specific for the binding of nucleons in the nucleus, and λ is determined by means of experiments concerning the interaction of π^0-mesons with the nucleus. The experiments were carried out on the synchrotron of the FIAN with maximum γ-energies of 265 and 210 MeV. Experimental arrangement: The γ-rays passed through

Card 1/3

a monitor-ionization chamber, through the gap of two lead collimeters, after which they hit the target. Vertical to the direction of the γ-rays there was the telescope system consisting of a carbon filter (of 6 cm thickness), a lead converter (of 5 mm thickness), a scintillation counter, aluminum absorber (2 cm), and a Cherenkov counter. The scintillator had the form of a disk (diameter 7 cm, thickness 3 cm) and consisted of a solution of terphenyl in toluene (4g/l). The radiator of the Cherenkov-counter was a cylindrical vessel (diameter 6 cm, height 12 cm), which was filled with distilled water. All counters were fitted with photomultipliers FEU -33. The measured dependence of the π^0-yield of A is given for the two E_γ^{max}-values in diagrams, viz. for C, Al, Cu, Mo, Cd, and Pb (Figs 4 - 5). Figures 6 and 7 show the dependence of the π^0-yield on E_γ^{max} for C- and Pb-targets. The values measured agree with the $A^{2/3}$-law. In conclusion the authors thank engineers P. N. Shareyko and A. A. Rudenko for the construction of the apparatus used for the experiments, and also Professor P. A. Cherenkov and

Professor V. I. Veksler for the interest they displayed and for their advice, and finally also A. D. Makov for his assistance in carrying out the experiments. There are 7 figures and 24 references, 5 of which are Soviet.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR (Physics Institute imeni P. N. Lebedev, AS USSR)

SUBMITTED: March 13, 1958

24.6700, 16.8100

76976
SOV/56-37-6-16/55

AUTHORS: Belousov, A. S., Rusakov, S. V, Tamm, E. I., and Cherenkov, P. A.

TITLE: Search for Particles with Masses Between 6 and 25 Electron Masses

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 37, Nr 6, pp 1613-1618 (USSR)

ABSTRACT: Experiments were carried out for the purpose of elucidating the question whether γ-quanta generate particles with mass lying between 6 and 25 electron masses according to the production cross sections as predicted by the electromagnetic theory of pair production. For this investigation fast coincidence circuits were used to measure the time of flight of particles with a given momentum between two scintillation counters. The following diagram illustrates the geometry of the setup:

Card 1/5

Search for Particles with Masses Between 6 and 25 Electron Masses

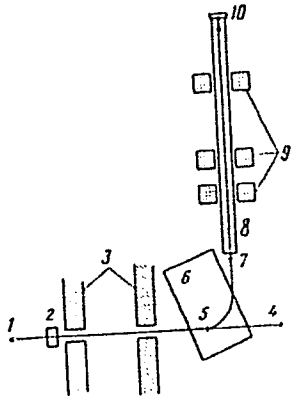


Fig. 1. Geometry of the experiment setup: (1) synchrotron target; (2) monitor chamber; (3) lead collimator; (4) direction of the bremsstrahlung beam; (5) lead target; (6) magnet; (7) scintillation counter; (8) vacuum tube; (9) focusing lenses; (10) scintillation counter.

Card 2/5

76976
SOV/56-37-6-16/55

Search for Particles with Masses Between 6 and 25 Electron Masses

The irradiation of the lead target by bremsstrahlung produced particles pairs. The separation of particles with a proper momentum was achieved by means of the magnetic field. The counters in the path of the particles at a distance S made it possible to measure the period separating the particles on their passage through the first and the second counter. The difference in the passage time of the particle with mass M and an electron having identical momentum was obtained from the relation $\tau_o = S(1-\beta_m)/c\beta_M$. Particles with mass M can be identified only when $N_{background}/N_e < N_M/N_e$, where, N_M - counting rate at the maximum in the curve of captured collisions for particles with mass M. Experiments were made with Pb target 0.5 thick for M = 8 and 12 m_e and 0.25 mm for M = 16 and 20 m_e. The theoretical coincidence

Card 3/5

Search for Particles with Masses Between 6 and 25 Electron Masses

counting rate was compared with the experimental rate obtained for parameters of the experimental setup corresponding to the registration of particles with the expected mass. In each set of experiments the ratio of the electron counting rate to the background was also measured. The results obtained show that the cross sections for the production of particles by γ-quanta with unit charge, spin 1/2 and masses lying between 6 and 25 m_e do not correspond to those predicted by the electromagnetic theory. The work was performed under the guidance of V. I. Veksler; P. N. Shareyko, A. A. Rudenko, A. D. Makov made contributior in the course of this work. There is a schematic diagram of the setup; 2 tables; 2 graphs; and 14 references, 9 Soviet, 3 U.K., 1 French, 1 U.S. The U.S. and U.K. references are: W. Davies, D. Shaw. Proc. Phys. Soc. A64, 1006, 1951; U. Jánossy, C. B. A. Melusner. Nature, 63, 181, 1949; E. W. Cowan. Science, 108, 534, 1948; D. Broadbenf, U. Jánossy.

Card 4/5

Search for Particles with Masses Between 6 and 25 Electron Masses

76976
SOV/56-37-6-16/55

Proc. Roy. Soc. 192, 364, 1948.

SUBMITTED: July 29, 1959

Card 5/5

31774
S/056/61/041/006/020/054
B102/B138

24.6600

AUTHORS: Belousov, A. S., Rusakov, S. V., Tamm, Ye. I., Tatarinskaya, L. S.

TITLE: π^0 photoproduction on deuterium at energies between 170 and 210 Mev

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 41, no. 6(12), 1961, 1793-1803

TEXT: In experiments carried out at the synchrotron of the Fizicheskiy institut im. P. N. Lebedeva AN SSSR (Physics Institute imeni P. N. Lebedev AS USSR) the differential cross sections of the reactions

$\gamma + d \rightarrow \pi^0 + d$

$\gamma + d \rightarrow \pi^0 + p + n$

were measured. They were compared with those known for the $\gamma + p \rightarrow \pi^0 + p$ reaction, in order to get data on π^0 photoproduction on neutrons. Vacuum targets from the fotomezonnaya laboratoriya FIAN (Photomeson Laboratory of the FIAN) were used, filled with liquid deuterium or

π^0 photoproduction on deuterium ...

hydrogen. They had an effective volume of 53 cm^3. The π^0-mesons were recorded through their decay gamma quanta by means of a three-counter scintillation telescope with ФЭУ-33 (FEU-33) photomultipliers. The fast coincidence, anticoincidence and time analyzing circuits where such that resolution was better than 10^{-8} sec. Maximum energies recorded by the five channels were 178, 186, 194, 202 and 210 Mev. The efficiency of the γ-telescope was $\gamma = \begin{cases} 0.0052 - 0.12 & \text{for } E_\gamma \leqslant 110 \text{ Mev} \\ 0.42 & \text{for } E_\gamma > 110 \text{ Mev} \end{cases}$ Necessary corrections did not exceed 10%. The energy dependence of the quantum yield in π^0 decay was measured at 44, 84 and 124° in the laboratory system. The measurements covered the energy ranges 170 to 210 Mev and 160 to 220 Mev at an angle of 84°. From these data the gamma emission cross sections were calculated by the method of "photon differences". Background due to random coincidences was small but that of the empty target was between 15 and 30% and caused high statistical error. The contribution from Compton effect γ-quanta was very small. The experimental

Card 2/4

π^0 photoproduction on deuterium ...

data were compared with theory in two ways: (a) The theoretically determined cross section ratios of reactions I and II in momentum approximation were used to calculate the quantum yield ratio. (b) The angular and energy dependences of I were used to calculate decay quanta distributions. For all angles of π^0-emission the total and elastic cross section ratio of I and II was almost independent of energy. For 44 and 84^0 the experimental value of this ratio was much higher than the theoretical for 124^0 it agreed. For angles below 90^0 and primary gamma energies of 170-210 Mev the elastic π^0 photoproduction cross section was thus much larger than expected from momentum approximation. For a more detailed comparison between experiment and momentum-approximation theory, data of A. I. Lebedev and A. M. Baldin (Otchet FIAN, 1961) were used. All results indicate that around 200 Mev the σ_d/σ_p ratio increases rapidly. The

authors thank Engineer P. N. Shareyko for design of the electronic apparatus and A. M. Baldin and A. I. Lebedev for discussions. A paper by A. M. Baldin and B. B. Govorkov (Nucl. Phys. 13, 193, 1959) is mentioned.

Card 3/4

π^0 photoproduction on deuterium ...

There are 8 figures, 1 table, and 17 references: 8 Soviet and 9 non-Soviet. The four most recent references to English-language publications read as follows: J. C. Keck, A. V. Tollestrup, H. H. Bingham. Phys. Rev., 103, 1549, 1956;A. S. Penfold, J. E. Less. Analysis of Photo Cross Sections, University of Illinois, 1958;L. J. Koester, F. E. Mills. Phys. Rev., 105, 1900, 1957;L. S. Hyman. Ph. D. Thesis, Massachusetts Institute of Technology, 1959.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR (Physics Institute imeni P. N. Lebedev of the Academy of Sciences, USSR)

SUBMITTED: July 20, 1961

44445
S/120/62/000/006/025/029
E073/E435

9.6150

AUTHORS: Belousov, A.S., Rusakov, S.V., Tamm, Ye.I., Tatarinskaya, L.S.

TITLE: Efficiency of a Cherenkov counter with a radiator made of lead glass for recording high-energy gamma-rays

PERIODICAL: Pribory i tekhnika eksperimenta, no.6, 1962, 125

TEXT: The authors measured the efficiency of Cherenkov counters with cylindrical 100 mm diameter, 100 mm long radiators made of heavy flint (3.87 g/cm^3, refractive index 1.548; radiation element 2.38 cm, critical energy 13 MeV). The radiator was placed into an aluminium cylinder with polished internal walls. One of the faces of the radiator was optically connected with the photocathode (sensitivity in excess of 50 μA/lumen) of a photomultiplier. The efficiency was determined by means of monochromatization of a beam of bremsstrahlung; the beam diameter of the γ-quanta was the same as the diameter of the radiator. Comparison of the obtained results with data obtained for the effect of telescopes indicates that, in a number of experiments, counters of this type can reduce appreciably the time necessary

Card 1/2

Efficiency of a Cherenkov ...

for setting the required statistical accuracy, allowing considerable simplification of the instrumentation. There is 1 figure.

ASSOCIATION: Fizicheskiy institut AN SSSR
(Institute of Physics AS USSR)

SUBMITTED: February 21, 1962

Card 2/2

S/056/62/043/003/012/063
B102/B104

AUTHORS: Belousov, A. S., Rusakov, S. V., Tamm, Ye. I.

TITLE: Low-energy photodeuterons from lithium

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 3(9), 1962, 813-814

TEXT: The photodeuteron-photoproton yield ratio from targets of natural lithium exposed to the bremsstrahlung from a synchrotron was measured. The targets had been placed inside the vacuum chamber and the particles emitted were recorded, after momentum selection, on photographic plates also in the chamber. The measurements were made with maximum bremsstrahlung energies, $E_{\gamma max}$, of 160, 200, 240 and 260 Mev and 3.8 Mev $\leqslant E_d \leqslant$ 9.6 Mev, 7.6 Mev $\leqslant E_p \leqslant$ 10 Mev for emission angles of from 23 to 57°. For these values of $E_{\gamma max}$ the following yield ratios were obtained: 0.061 ± 0.009, 0.074 ± 0.012, 0.098 ± 0.012, 0.092 ± 0.012. The photoproton yield remained constant (± 3.6 %) when $E_{\gamma max}$ was changed, i.e. the photodeuteron yield

Card 1/2

Low-energy photodeuterons from...

grew with $E_{\gamma max}$. There is 1 table.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR (Physics Institute imeni P. N. Lebedev of the Academy of Sciences USSR)

SUBMITTED: April 11, 1962

Card 2/2

24.6610

41144
S/056/62/043/004/056/061
B104/B186

AUTHORS: Belousov, A. S., Rusakov, S. V., Tamm, Ye. I., Tatarinskaya, L. S.

TITLE: π^0-meson photoproduction in hydrogen and deuterium within the range of small angles

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 4(10), 1962, 1550-1552

TEXT: Unlike in earlier experiments (ZhETF, 41, 1793, 1961) the authors here measured directly the differential cross sections of the processes

$$\gamma + d \longrightarrow \begin{cases} d + \pi^0 \\ n + p + \pi^0 \end{cases}, \quad \gamma + p = p + \pi^0.$$

With the aid of γ-telescopes, the π^0-mesons were determined from the two γ-quanta occurring in the decay of one π^0-meson. The differential cross sections for mean energies κ of the primary photons and mean angles θ of departure of the meson were determined as the ratios of the measured yield

Card 1/A3

π^0-meson photoproduction in ...

$Y(\alpha, \theta_1, \varkappa)$ to the probability of recording one π^0-meson:

$$\frac{d\sigma}{d\Omega}(\bar{\varkappa}, \bar{\theta}_\pi) = Y(\alpha, \theta_1, \varkappa) \Big/ n \int_{\varkappa_{пор}}^{\varkappa_{max}} \int_{\Omega_\pi} N(\varkappa, \Omega_\pi) f(\varkappa) \, d\Omega_\pi \, d\varkappa; \qquad (1).$$

Here the angles α and θ determine the position of the telescopes, n is the number of nuclei per cm^2 of target, $f(\varkappa)$ is the spectrum of bremsstrahlung, $\varkappa_{max}$ and $\varkappa_{пор}$ are the maximum and the threshold energies of the photons, $N(\varkappa, \Omega_\pi)$ is the probability of recording one π^0-meson flying off at solid angles of between θ and $\theta + d\theta$ and produced by a meson of the energy of between $\varkappa$ and $\varkappa + d\varkappa$. For the mean values one has

$$\bar{\varkappa} = \int_{\Omega_\pi} \varkappa N(\varkappa, \Omega_\pi) \, d\Omega_\pi \Big/ \int_{\Omega_\pi} N(\varkappa, \Omega_\pi) \, d\Omega_\pi, \qquad (2).$$

$$\overline{\cos\theta_\pi} = \int_{\varkappa_{пор}}^{\varkappa_{max}} \cos\theta_\pi N(\varkappa, \Omega_\pi) f(\varkappa) \, d\varkappa \Big/ \int_{\varkappa_{пор}}^{\varkappa_{max}} N(\varkappa, \Omega_\pi) f(\varkappa) \, d\varkappa.$$

π^0-meson photoproduction in ... S/056/62/043/004/056/061
B104/B186

The integrals of the functions here described were computed analytically and by the Monte-Carlo method using a computer. The present results for hydrogen at $\theta_\pi = 0$, 15, and 90° ($\kappa \approx 220$ Mev) agree only with the results of the paper in which the contribution of D-waves was considered (J. S. Ball. Phys. Rev., 124, 2014, 1961). The results for deuterium at $\theta_\pi = 0^\circ$ ($\kappa \approx 200$-250 Mev) agree well with experimental data. If $\kappa < 200$ Mev the experimental data exceed the theoretical by a value which is greater than two standard deviations. This deviation is probably associated with the contribution of π^0-mesons produced by scattering with charge exchange on $\pi^\pm$-mesons. There are 2 tables.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR (Physics Institute imeni P. N. Lebedev of the Academy of Sciences USSR)

SUBMITTED: July 19, 1962

Card 3/13

TAMMAN, A. I. J & AU.

Zhukovskii, D. L.

The harvesting, storage and simplest methods of processing potatoes Moskva Sel'khozgiz 1944. 47;p.

1. Potatoes--Storage. 2. Potatoes--Evaporation. I. Tamman, A. I., jt. au.

TAMMAN, A. I.

Potatoes

Manuring and the place of potatoes in grass-field crop rotations. Sov. agron 10, No. 6, 1952.

9. Monthly List of Russian Accessions, Library of Congress, August 1952 ~~1953~~ Uncl.

1. TAMMAN, A. I.

2. USSR (600)

4. Potatoes

7. Achieve high, steady yields of potatoes. Sad i og. no. 11, 1952.

9. Monthly List of Russian Accessions, Library of Congress, March 1953. Unclassified.

TAMMAN, A. I., Doc Agric Sci (diss) -- "The use of fertilizers on potatoes in the non-chernozem belt and on podzolic chernozems". Moscow, 1959. 22 pp (Moscow Order of Lenin Agric Acad im K, A. Timiryazev), 110 copies (KL, No 22, 1959, 118)

TAMMAN, A.I.; KHAR'KOV, D.V.

Studying new methods for increasing the effectiveness of fertilizers. [Trudy] NIUIF no.164:68-69 '69. (MIRA 15:5)
(Fertilizers and manures)

TAMMAN, A.I.; KHAR'KOV, D.V.

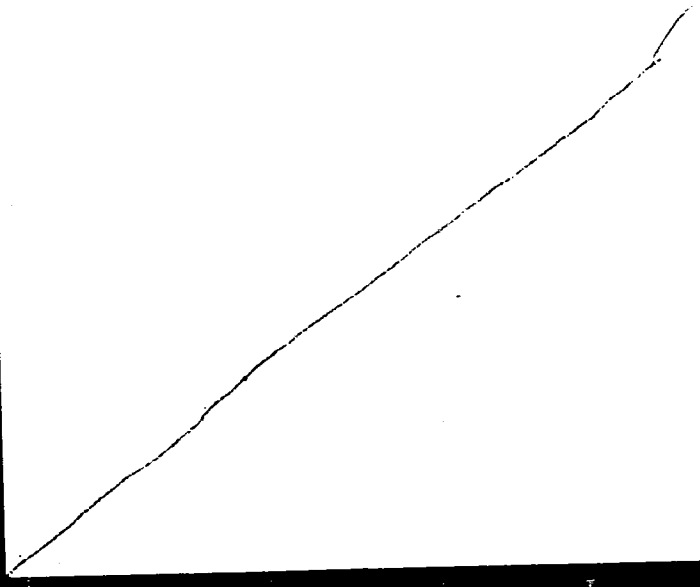
Long-range field tests with various nitrogen fertilizers. [Trudy] NIUIF no.164:71-74 '59. (MIRA 15:5)
(Nitrogen fertilizers)

TAMMAN, A.I., doktor sel'khoz. nauk; TAIROVA, V.N., red.; BELOVA, N.N., tekhn. red.

[Fertilizers for potatoes in the non-Chernozem belt and in podzolized Chernozem soils] Udobrenie kartofelia v nechernozemnoi polose i na opodzolennykh chernozemakh. Moskva, Sel'khozizdat, 1963. 133 p. (MIRA 16:7)
(Potatoes--Fertilizers and manures)

TAMMAN, A., insh.

Filters with lumped selectivity. Radio no.6:22-24 Je '65. (MIRA 18:10)



TAMMAN, A., inzh.

Filters with lumped selectivity. Radio no.7:20-21 Jl '65. (MIRA 18:9)

POZIN, M. Ye.; GINSTLING, A.M.

Philosophical principles of the "classical" theory of "solid-phase" processes; critique of the teachings of Tammann and Hedvall. Zhur.prikl. khim. 26 no.6:561-568 Je '53. (MLRA 6:7)
(Solutions, Solid) (Tammann, Gustav, 1861-1938) (Hedvall, Johan Arvid, 1888-)

BARON, S., kand.fiz.-matem.nauk; TAMMAY, T [Tammai, T.]

Summability factors in the Cesàro method of negative order.
Eesti tead.akad.tehn.füüs. no.1:33-36 '62.

1. Tartuskiy gosudarstvenny universitet.

TAMME Ye Ye. E.E

3

Kaazik, Yu. Ya., and Tamme, E. E. On a method of approximate solution of functional equations. Doklady Akad. Nauk SSSR (N.S.) 101 (1955), 981–984. (Russian) 1 - F/W

Let P be an analytic operator mapping a Banach space X onto a linear normed space Y. One wants to find the solution x^* of the equation $P(x)=0$, starting from a given x_0. Let $\Delta x_1=x_1-x_0$. The authors consider the following linearly convergent iterative algorithm determining x_n $(n=1, 2, \cdots)$:

$$P(x_0)+P'(x_0)\Delta x_1=0,$$

$$P(x_0)+[P'(x_0)+\sum_{k=2}^{k}(k!)^{-1}P^{(k)}(x_0)\Delta x_{n-k+1}\cdots\Delta x_{n-1}]\Delta x_n=0.$$

When X, Y are the complex field, the algorithm is known [E. Schröder, Math. Ann. 2 (1870), 317–365, and others]. If $P'(x_0)$ has an inverse Γ with $\|\Gamma\|\leq B$, and if certain other conditions hold, it is proved that $\|x^*-x_n\|\leq Cm^n$, where C and m are explicit constants involving B, $\|\Gamma P(x_0)\|$ and the asymptotic nature of $\|(k!)^{-1}P^{(k)}(x_0)\|$. An additional hypothesis implies the uniqueness of the solution in a neighborhood of x_0.

Two numerical examples deal with the solution of polynomial equations in one and two complex variables, and compare the authors' bounds with the true errors.

G. E. Forsythe (Los Angeles, Calif.).

Tartu State Univ

TAMME, E. E.

1 3

1 - F/W

Tamme, E. E. On approximate solution of functional equations by the method of expansion in a series of an inverse operator. Dokl. Akad. Nauk SSSR (N.S.) 103 (1955), 769–772. (Russian)

Let P be an analytic function on a Banach space X to another such space Y. This paper deals with the possibility of obtaining a solution x^* of $P(x)=0$ by the expansion

$$x^*=x_0+\sum_{k=0}^{\infty}\frac{(-1)^k}{k!}\Phi^{(k)}(y_0)[P(x_0)]^k.$$

Here x_0 is an approximation sufficiently close to x^*, $y_0=P(x_0)$, and Φ is the inverse of P and is assumed to exist near y_0. Bounds on the derivatives $\Phi^{(k)}$ (which can be expressed in terms of the derivatives $P^{(k)}$) and conditions sufficient to assure convergence are given. The error in taking a finite number of terms is estimated. Faster rates of convergence were obtained by L. V. Kantorovič [same Dokl. 59 (1948), 1237–1240; MR 9, 537] who used the first two terms as an iterative procedure (Newton's method), and by M. I. Nečepurenko [Uspehi Mat. Nauk (N.S.) 9 (1954), no. 2(60), 163–170; MR 15, 801] using the first three terms iteratively (Čebyšev's method). However the present procedure has the advantage that the only inversion required is $[P'(x_0)]^{-1}$. *R. G. Bartle.*

TAMME, E.E., Cand Phys Math Sci -- (diss) "The principle of majorants in the general theory of iteration methods." Tartu, 1958, 9 pp (Tartu State Univ) Bibliography: pp 9 (10 titles) (KL, 42-58, 113)

AUTHOR: Tamme, E.E. (Tartu) SOV/140-58-5-10/14

TITLE: On a Class of Convergent Iteration Methods (Ob odnom klasse skhodyashchikhsya iteratsionnykh metodov)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Matematika, 1958, Nr 5, pp 115-121 (USSR)

ABSTRACT: The equation

(1) $P(x) = 0$

is considered, where P is a non-linear operator from the Banach space X into the linear space Y. Let $\Gamma_0 = \left[P'(x_0)\right]^{-1}$ and let $\left\| \Gamma_0 P^{(i)}(x_0) \right\| \leqslant q_i$ $(i=0,2,3,\ldots)$ hold for an element $x_0 \in X$. Let $q(u) = q_0 + \sum_{i=2}^{\infty} \frac{1}{i!} q_i u^i$. From general results of Kantorovich [Ref 3,4] it follows:

Theorem: The equation $u=q(u)$ is assumed to possess a positive solution; let Γ_0 exist; P is assumed to be analytic in S: $\|x-x_0\| \leqslant u^*$, where u^* is the smallest nonnegative solution of $u=q(u)$. Then (1) possesses a unique solution in S.

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On a Class of Convergent Iteration Methods SOV/140-58-5-10/14

The author shows that under the assumptions of this theorem the convergence of a large class of iteration processes is guaranteed. According to Kaazik [Ref 1] the author considers the iterations

$$(2)\quad \Delta x_n = x_{n+1} - x_n = G_n\left[\Gamma_{i_n} P(x_n), E, \Gamma_{i_n} P''(x_n), \ldots, \Gamma_{i_n} P^{(k_n)}(x_n)\right]$$

$$n=0,1,\ldots;\ 0 \leqslant i_n \leqslant n;\ i_n \leqslant i_{n+1};\ k_n \geqslant 1;\ \Gamma_{i_n} = \left[P'(x_{i_n})\right]^{-1},$$

E unit operator. It is shown that (2) converges and that in S the estimation $\|x^* - x_n\| \leqslant u^* - u_n$ holds, if all iteration operators G_n are of a certain type A.

These results are transferred also to the case of a nonanalytic P, furthermore it is shown how it is possible to obtain new iteration operators in order to accelerate the convergence. The basis of the method is the construction of certain majorizing equations according to Kantorovich.

There are 7 references, 6 of which are Soviet, and 1 is American.

Card 2/2

ASSOCIATION: Tartusskiy gosudarstvennyy universitet (Tartu State University)

AUTHOR: Tamme, E.E. SOV/20-120-2-9/63

TITLE: On Implicit Operators (O neyavnykh operatorakh)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 120, Nr 2, pp 259-261 (USSR)

ABSTRACT: The paper contains generalizations of earlier results of the author [Ref 4]. In the Banach spaces X,Y,Z an implicit operator F(x,y) of the direct sum X + Y in Z is considered. The author investigates the region of convergence of the expansion in power series of the implicit operator and estimates the remainder term. The possibilities of application of the obtained results for an approximate solution of functional equations are discussed. There are 6 references, 4 of which are Soviet, 1 American and 1 German.

ASSOCIATION: Tartuskiy gosudarstvennyy universitet (Tartu State University)

PRESENTED: January 11, 1958, by I.G.Petrovskiy, Academician.
SUBMITTED: January 9, 1958

1. Operators(Mathematics)—Applications

Card 1/1

16(1)
AUTHORS: Tamme, E.E., and Kheynla, L.E. (Heinla, L.E.) 307/140-59-3-22/22

TITLE: On the Approximate Solution of Operator Equations With a Parameter

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Matematika, 1959, Nr 3, pp 229-232 (USSR)

ABSTRACT: The authors consider iteration methods for the solution of the equation $P(x,y) = 0$, where y is a parameter and P is an operato analytic in the neighborhood of the point (x_0,y_0), acting from the Banach spaces X and Y to the Banach space Z. The existence of the inverse operator $\Gamma_0 = \left[P_x(x_0,y_0)\right]^{-1}$ is assumed. The authors give a sequence of approximations converging, under certain assumptions, to the rigorous solution. The paper generalizes the results of Kaazik and Tamme [Ref 3]. There are 4 Soviet references.

ASSOCIATION: Tartuskiy gosudarstvennyy universitet (Tartu State University)

SUBMITTED: October 31, 1958

Card 1/1

16.6500

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S/044/62/000/008/046/073
C111/C333

AUTHOR: Tamme, E.

TITLE: On the majorant principle for iteration methods

PERIODICAL: Referativnyy zhurnal, Matematika, no. 8, 1962, 32, abstract 8V164. ("Tartu Ulikooli toimetised", 1959, no. 73, 84-118)

TEXT: Studied are iteration methods for the solution of the equation $P(X) = 0$, ($P(x)$ transforms the Banach space X into the space Z of the same type). The considered methods are defined by the formulas

$$\Delta x_n = x_{n+1} - x_n =$$

$$= G_n\left[\Gamma_{i_n} P(x_n),\ E,\ \Gamma_{i_n} P''(x_n),\ldots,\Gamma_{i_n} P^{(k)}{}_n(x_n)\right], \qquad (1)$$

where $n = 0,1,\ldots;\ 0 \leq i_n \leq n;\ i_n \leq i_{n+1};\ k_n > 1;$ $\Gamma_i = \left[P'(x_i)\right]^{-1}$ and G_n being a certain function. The space X is normed by the semi-ordered B^+-space U (the norm is denoted by $|\ |$). One supposes that there exist i-fold linear operators q_i out of U into U such,

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On the majorant principle for iteration.C111/C333

that $|\Gamma_o P^{(i)}(x_o)| \leq q_i$ $(i=0,2,3,\ldots,)$, where the series

$$q(u) = q_o + \sum_{i=2}^{\infty} \frac{1}{i!} q_i u^i$$

converges in a certain neighborhood of the point $u = 0$. One constructs a majorizing iteration process of the type (1) for the majorizing equation $q(u) - u = 0$. Under certain conditions there follows out of the existence of the solution u^* of the majorizing equation that the iteration process for this equation converges to u^*, further on that the root x^* of the function $P(x)$ does exist, being unique, and that there holds $|x_n - x^*| \leq u^* - u_n$. Further on one studies the implicite function $y = \Phi(x)$ which is defined by the equation $P(x,y) = 0$. One introduces the majorizing equation $q(u,v) = 0$ ($u \in U$, v belonging to a certain space V on the type B^+), and one determines $u = \varphi(v)$ out of it. Under certain suppositions one majorizes the power series expansion of $\Phi(x)$ by an analogous expansion for $\varphi(v)$.

Examples:

1.) Estimations for the solution of a nonlinear integral equation

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$(X = Z = C[\alpha, \beta]; U = m_2; |x| \leq u = (u_1, u_2)$, if $|x(s)| \leq u_1$ in $[\alpha, \gamma]$ and $|x(s)| \leq u_2$ in $[\gamma, \beta]$).

2.) Estimations for the solution of the boundary value problem for a non-linear ordinary differential equation ($X = C^1[\alpha, \beta]$; $U = m_2$; $|x| \leq u_1$ if $|x(s)| \leq u_1$, $|x'(s)| \leq u_2$ in $[\alpha, \beta]$).

One investigates the perturbation theory for the eigenvalues of the equation

$$(A - \lambda B)x + yF(x, \lambda, y) = 0 \qquad (1)$$

where A, B are linear (generally not bounded) operators out of the Banach space X into just the same space Z, y being a numerical perturbation parameter, and the operator F being homogeneous with respect to x. One supposes that the non-perturbated equation $(A - \lambda_0 B)x = 0$ possesses m linear independent solutions $x_{10}, \ldots, x_{mo}$, where the vector system $\{Bx_{io}\} \subset Y$ permits a system of functionals in Z: $\{f_i\}$ being biorthogonal to it.

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One denotes the generalized operator being inverse to $A - \lambda_o B$, with R. For the determination of the eigenvalue $\lambda = \lambda_o + \lambda$ of the perturbated equation (2) with an eigenvector being neighbored to x_{io} (at small y) one searches x with the set up

$x = \sum_{j=1}^{m} \alpha_j x_{jo} + \tilde{x}$, where $\alpha_i = 1$, $f_k B\tilde{x} = 0$ $(k = 1,\ldots,m)$. For the determination of $\alpha_j (j \neq i)$ and $\tilde{x}$ one obtains the system

$$\begin{aligned} &\tilde{x} - \tilde{\lambda} RB\tilde{x} + yRF(x,\lambda,y) = 0 \\ &\tilde{\lambda} - yf_i F(x,\lambda,y) = 0 \qquad (3) \\ &\alpha_j f_i F(x,\lambda,y) - f_j F(x,\lambda,y) = 0 \ (j \neq i) . \end{aligned}$$

One introduces the space, the elements of which are the systems $\xi = (\tilde{x}, \lambda, \alpha_1, \ldots, \alpha_{i-1}, \alpha_{i+1} \ldots \alpha_m)$. This space is generalized normed by the elements u of the space

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$U : \overline{u} = (u, \alpha, \beta_1, \ldots, \beta_{i-1}, \beta_{i+1}, \ldots, \beta_m)$. The equation system (3) is written down in the form $P_i(\xi, y) = 0$, where upon one starts the above described study of implicit equations by aid of the majorizing equations. Some special cases are considered, by which it becomes possible to obtain a comparison with the results of other authors. In a number of cases the results of the author are more exact.

[Abstracter's note: Complete translation.]

Card 5/5

16.6500

S/044/62/000/003/059/092
C111/C444

AUTHORS: Tamme, E., Yurgenson, R.

TITLE: On the approximative solution of differential equations

PERIODICAL: Referativnyy zhurnal, Matematika, no. 3, 1962, 31-32, abstract 3V165. ("Tartu Ülikooli toimetised", 1961, no.102, 301-316)

TEXT: In the practise of calculation it is often usual to substitute a given differential equation by a simpler one which in a certain sense is neighbored to the equation which is to be solved. The question occurs how much the solutions of the two equations differ from each other. The present paper is dedicated to this question for several linear and nonlinear problems.

Let be known: the solution $x_o(s)$ of the problem

$$x^{(n)} + \sum_{k=0}^{n-1} q_k(s)x^{(k)} = g(s) \qquad (1)$$

$$u_i(x) = \sum_{j=0}^{n-1} \left[a_{ij}x^{(j)}(a) + b_{ij}x^{(j)}(b)\right] = 0 \qquad (2)$$

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C111/C444

On the approximative solution of ...

the Green function G(s,t) of the equation

$$x^{(n)} + \sum_{k=0}^{n-1} r_k(s)\, x^{(k)} = 0 \qquad (3)$$

with the boundary condition (2); let the condition

$$\eta = \sum_{j=0}^{n-1} \alpha_j \alpha_j < 1$$

be satisfied. Then the equation

$$x^{(n)} + \sum_{k=0}^{n-1} p_k(s)\, x^{(k)} = f(s) \qquad (4)$$

with the boundary condition (2) on the interval [a, b] possesses a

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On the approximative solution of ...

unique solution $x^*(s)$ such that

$$\left|x^{*(i)}(s) - x_0^{(i)}(s)\right| \leq \varepsilon \mu_j \quad (i = 0,1,\ldots, n-1)$$

$$\varepsilon = \frac{1}{1-\eta}\left[\sum_{j=0}^{n-1} \delta_j \varkappa_j + \delta\right] .$$

One supposes the coefficients and the right hands of (1), (3) and (4) to be continuous on $[a,b]$. The following notations are used:

$$|g(s)| < \beta;\ |f(s)-g(s)| < \delta;\ |p_j(s)-r_j(s)| < \alpha_j;$$
$$|q_j(s)-r_j(s)| < \beta_j;\ |p_j(s)-q_j(s)| < \delta_j;\ |x_0^{(j)}(s)| < \varkappa_j;$$
$$\int_a^b \left|\frac{\partial^j}{\partial s^j} G(s,t)\right| dt < \mu_j,\ (j = 0, 1, \ldots, n-1;\ a < s < b).$$

An analogous estimation was obtained by I. M. Vlasov (Rzh. Mat., 1958, 2049 and 2060; 1959, 2652), who in (3) put $r_k(s) = q_k(s)$ $(k=0,1,\ldots,n-1)$.

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On the approximative solution of ...

If $x_0(s)$ is not a sufficiently good approximation of the searched solution $x^*(s)$, then the authors recommend a uniformly converging iteration process and give estimations for $|x^{*(i)}(s) - x_k^{(i)}(s)|$ (i=0,1,...,n-1; k=0,1,...). An analogous theorem on the existence, uniqueness and position of the solution is proved for the non-linear differential equation

$$\sum_{k=0}^{n} r_k(s)x^{(k)} = f(s,x,x',\ldots, x^{(m)}) \quad (m < n)$$

with the boundary conditions (2), also for the elliptic equation of second order

$$\frac{\partial^2 x}{\partial s^2} + \frac{\partial^2 x}{\partial t^2} + p_{10}(s,t)\frac{\partial x}{\partial s} + p_{01}(s,t)\frac{\partial x}{\partial t} + p_{00}(s,t)x = f(s,t)$$

in the closed domain D with vanishing boundary conditions on the boundary of D. For the proof of these theorems one uses essentially

Card 4/5

On the approximative solution of ... S/044/62/000/003/059/092
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lemmata which have been obtained by the authors by aid of functional-analytic methods for operator equations in generalized normed spaces. An appendix contains a table of the estimations of the Green function for 17 boundary value problems.

[Abstracter's note: Complete translation.]

Card 5/5

16.6500

39898
S/044/62/000/007/061/100
C111/C333

AUTHOR: Tamme, E.

TITLE: On the exactness of the momentum method

PERIODICAL: Referativnyy zhurnal, Matematika, no. 7, 1962, 35, abstract 7V156. ("Tartu Ülikooli toimetised", 1961, no. 102, 317-328)

TEXT: Let X be a normed space and $\tilde{X}$ be its subspace. Let us consider the equations

$$Kx = x - \lambda Hx = y,$$
$$\tilde{K}\tilde{x} = \tilde{x} - \lambda \tilde{H}\tilde{x} = Py$$

where H and $\tilde{H}$ are linear operations in X and $\tilde{X}$, P being a linear operation projecting X onto $\tilde{X}$. Proved are theorems being analogous to the central theorems of the general theory of the approximation methods of L. V. Kantorovich. An essential difference only lies in the fact that the condition

$$(\| PHx - \tilde{H}\tilde{x} \| \leq \eta \| \tilde{x} \|)$$

for the proximity of the operations H and $\tilde{H}$, and the condition for good

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On the exactness of the . . .

approximation of the elements H x by elements out of X in the referred paper are substituted by the demand that for the norm $\| X - \tilde{K}P \|$ there be one estimation well-known. Though this demand limits the range of application of the proved theorems, these theorems can very well be effective. This latter fact is shown in the paper for the solution of infinite equation systems, differential and integral equations according to the momentum method.

[Abstracter's note: Complete translation.]

Card 2/2

S/044/62/000/008/045/073
C111/C333

16.6500

AUTHOR: Tamme, E.

TITLE: On the exactness of the approximation methods for the determination of eigenvalues and eigenfunctions

PERIODICAL: Referativnyy zhurnal, Matematika, no. 8, 1962, 32, abstract 8V163. ("Tartu Ülikooli toimetised", 1961, no.102; 329-337)

TEXT: Considered are the applications of the theorems on the existence of roots of the equation

$$F(z) = 0 \qquad (1)$$

where F is an operator acting out of a space Z into a certain linear space W. One supposes that Z is a space of the type B_K which is normed by aid of a space U of the type KB. The equation (1) is majorized by a quadratic equation $Q(u) = 0$ in U. One compares the eigenvalue problem for the bounded linear operator K in the Banach space X with the analogous problem for the operator $\overline{K}$ in the Banach space $\overline{X}$. One supposes that between the spaces X and $\overline{X}$, as well as between the operators K and $\overline{K}$, there exist the connections usual in the general theory of the

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On the exactness of the . . .

approximation methods of L. V. Kantorovich. One introduces the space Z of the couples (x, λ). One takes the two-dimensional space $\{(u_1, u_2)\}$ for U; the introduction of a norm for Z follows by the relation $\|(x,\lambda)\| = (\|x\|, |\lambda|)$. The equation system for the determination of the eigenvalue λ and the eigenvector x (which is normed by $fx = 1$, where f is a certain functional) of the operator K is written down as an equation with respect to Z:

$$F(z) \equiv (Kx - \lambda x, fx - 1) = 0 .$$

The dates necessary for the construction of the majorizing equation are obtained by aid of the analogous equation $\bar{F}(\bar{z}) = 0$ in the space $\bar{Z}$ of the couples $(\bar{x}, \lambda)$. For this equation the existence of the strict or approximative solution $(\bar{x}_0, \bar{\lambda}_0)$ is supposed. We do not formulate the resulting theorem becaus it is rather valuminous. one considers the application of this theorem on the following methods: 1.) on a group of methods, where the approximating space $\bar{X}$ is finite, 2.) on the reduction method for infinite matrices, 3.) on the method, where in integral operators the kernel is substituted by a degenerated kernel.

[Abstracter's note: Complete translation.]

Card 2/2

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ACCESSION NR: AR5012988 UR/0044/65/000/003/B133/B134

SOURCE: Ref. zh. Matematika, Abs. 3B655

15
B

AUTHOR: Tamme, E.; Saarniyt, I.

TITLE: The a posteriori estimate of the error of approximate solutions of linear differential equations

16

CITED SOURCE: Uch. zap. Tartusk. un-ta, vyp. 150, 1964, 216-230

TOPIC TAGS: linear differential equation, successive approximation, error estimation, Green function

TRANSLATION: The differential equation

$$\sum_{l=0}^{n} p_l(x) y^{(l)} = f(x), \qquad (1)$$

is investigated. By putting

$$U_i(y) = \sum_{l=0}^{n-1} \alpha_{il} y^{(l)}(a) + \beta_{il} y^{(l)}(b)] \quad (a < b) \qquad (1a)$$

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and assuming that over the segment (a, b) the functions $p_j(x)$, $0 \leq j \leq m-1$, and $f(x)$ are quadratically integrable, and that $p_m(x)$ is continuous and bounded from below by a positive number, the author first studies the problem of the a posteriori error estimate of approximate solutions of Equation (1) with boundary conditions

$$U_i(y) = \gamma_i \quad (i = 1, 2, \ldots, m). \tag{2}$$

and then the case with initial conditions

$$y^{(j)}(x_0) = y_0^{(j)} \quad (j = 0, \ldots, m-1). \tag{3}$$

In the case of the problem (1), (2) he investigates in parallel the problem

$$\left.\begin{aligned} p_m(x)\, y^{(m)} + \sum_{j=1}^{m-1} q_j(x)\, y^{(j)} &= 0, \\ U_i(y) &= 0 \quad (i = 1, 2, \ldots, m), \end{aligned}\right\} \tag{3a}$$

for which the Green's function $G(s, t)$ is known and where the function $q_j(x)$ is close to the functions $p_j(x)$. Using the $G(s, t)$ function he finds the estimate

L 54017-65

ACCESSION NR: AR5012988

0

of the absolute magnitudes of the differences $y^{(j)}(x) - Y^{(j)}(x)$, ($j = 0, \ldots, n - 1$), where $y(x)$ = the exact solution of the problem (1), (2) and $Y(x)$ = the solution of the same problem following an arbitrary approximate method. The problem (1), (3) with the given initial condition is considered by the author to be a special case of the problem (1), (2) with boundary conditions, and the results of this last problem are then extended to the problem (1), (2). The exposition is illustrated by numerical examples. There are 3 references. P. Bondarenko.

SUB CODE: MA ENCL: 00

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L 61037-65 EWT(l)/EPA(s)-2/EWT(m)/EPF(n)-2/T-2/EWP(t)/EWP(b)/ETC(m) Ps-4/
Pt-7/Pu-4 LJP(c) JD/WW/JG
ACCESSION NR: AR5017417 UR/0137/65/000/006/G013/G013

SOURCE: Ref. zh. Metallurgiya, Abs. 6G92

AUTHOR: Ristkheyn, E. M.; Tammemyagi, Kh. A.; Tiysmus, Kh. A.; Yanes, Kh. I.

TITLE: Test of EMN-7 induction pump with liquid magnesium

CITED SOURCE: Tr. Tallinsk. politekhn. in-ta, v. A, no. 214, 1964, 111-122

TOPIC TAGS: electromagnetic pump, liquid metal pump, magnesium, argon, oxidation inhibition, EMN-7 liquid metal pump

TRANSLATION: The article describes a laboratory apparatus, developed in the Tallinsk Polytechnic Institute, for a long term test of EMN-7 induction pump on liquid magnesium, and gives the results of the test. Measurements were made of the capacity and head of the induction pump, the temperature at various points in the induction pump, the electrical conditions in the induction pump, and the parameters of the cooling air. Results of the test of the induction pump are presented

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ACCESSION NR: AR5017417

in the form of experimental curves. The test on the pumping of liquid magnesium, carried out at a temperature of 700-800C for ten days, proved: the operating ability of the induction pump and sufficient resistance of the materials used in the apparatus in a medium of liquid magnesium; use of argon in the metallic passage eliminates oxidation of the magnesium during pumping; the capacity and the head created by the induction pump is easily regulated over a wide range by varying the voltage. Orig. art. has: 10 figures. (From RZh Elektrotekhn.)

SUB CODE: MM ENCL: 00

Card 2/2

(N) L 12041-66 EWT(d)/EWT(m)/EWP(w)/EWP(v)/T/EWP(t)/EWP(k)/EWP(b)
ACC NR: AT5028830 SOURCE CODE: UR/2807/64/000/214/0111/0122
EWA(h)/ETC(m) IJP(c) JD/WW/JG/EM/DJ

AUTHOR: Ristkheyn, E. M.; Tammemyagi, Kh. A.; Tiysmus, Kh. A.; Yanes, Kh. I.

ORG: Polytechnic Institute, Tallinn (Politekhnicheskiy institut)

TITLE: Testing of EMN-7 induction pump on liquid magnesium

SOURCE: Tallinn. Politekhnicheskiy institut. Trudy. Seriya A, no. 214, 1964. Issledovaniye i rpoyektirovaniye elektromagnitnykh sredstv peremeshcheniya zhidkikh metallov; sbornik trudov, no. 2, 111-122

TOPIC TAGS: electromagnetic pump, liquid metal pump, magnesium

ABSTRACT: Experiments were carried out at TPI to determine the performance of the EMN-7 pump in the case of liquid magnesium at 700-800°C. The following advantages of electromagnetic pumps were establihsed: the tract through which the metal flows can be hermetically sealed; the pressure can be controlled electrically over a wide range; the material used (St 3 steel) is stable in liquid magnesium; filling of the metal tract with argon excludes the burning off of magnesium during the transfer; the pump can melt magnesium which solidifies the channel. The pumping system can be completely automated. The experiments also show-

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L 12041-66

ACC NR: AT5028830

ed that some of the heating elements can be disconnected under steady state conditions without impairing the process in any way. Orig. art. has: 10 figures.

SUB CODE: ~~EM~~ 13/ SUBM DATE: 00/ ORIG REF: 001/ OTH REF: 000

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Card 2/2

Tammet, Kh.

PHASE I BOOK EXPLOITATION SOV/6150

Akademiya nauk Latviyskoy SSR. Institut eksperimental'noy meditsiny.

Voprosy kurortologii. [t.] 5: Problemy fiziologicheskogo deystviya i terapevticheskogo primeneniya aeroionov (Problems in Health-Resort Therapy. v. 5: Studies of the Physiological Effect and Therapeutic Application of Air Ions). Riga, Izd-vo AN Latviyskoy SSR, 1959. 424 p. (Series: Its: Trudy, t. 20) Errata slip inserted. 1000 copies printed.

Sponsoring Agency: Akademiya nauk Latviyskoy SSR. Institut eksperimental'noy meditsiny.

Editorial Board: Resp. Ed.: L. L. Vasil'yev, Professor, P. D. Perli, Professor, F. G. Portnov, Candidate of Medical Sciences, Ya. Yu. Reynet, Candidate of Physical and Mathematical Sciences, and L.M. Tutkevich, Candidate of Medical Sciences; Ed.: A. Vengranovich; Tech. Ed.: A. Zhukovskaya.

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Problems in Health-Resort (Cont.) SOV/6150

PURPOSE: This book is intended for physicians working at health resorts and for the general practitioner.

COVERAGE: This book, a collection of articles, is essentially the proceedings of the Second Conference on the Physiological Effect and Therapeutic Application of Air Ions, held at Riga (Latvian SSR) in December 1957. The use of negative air ions is believed to be beneficial in the treatment of nonhealing wounds and ulcers which often result from radiation injury. The book contains photos of numerous devices described in the text. Numerous references, mostly Soviet, are given at the end of some of the articles.

TABLE OF CONTENTS [Abridged]:

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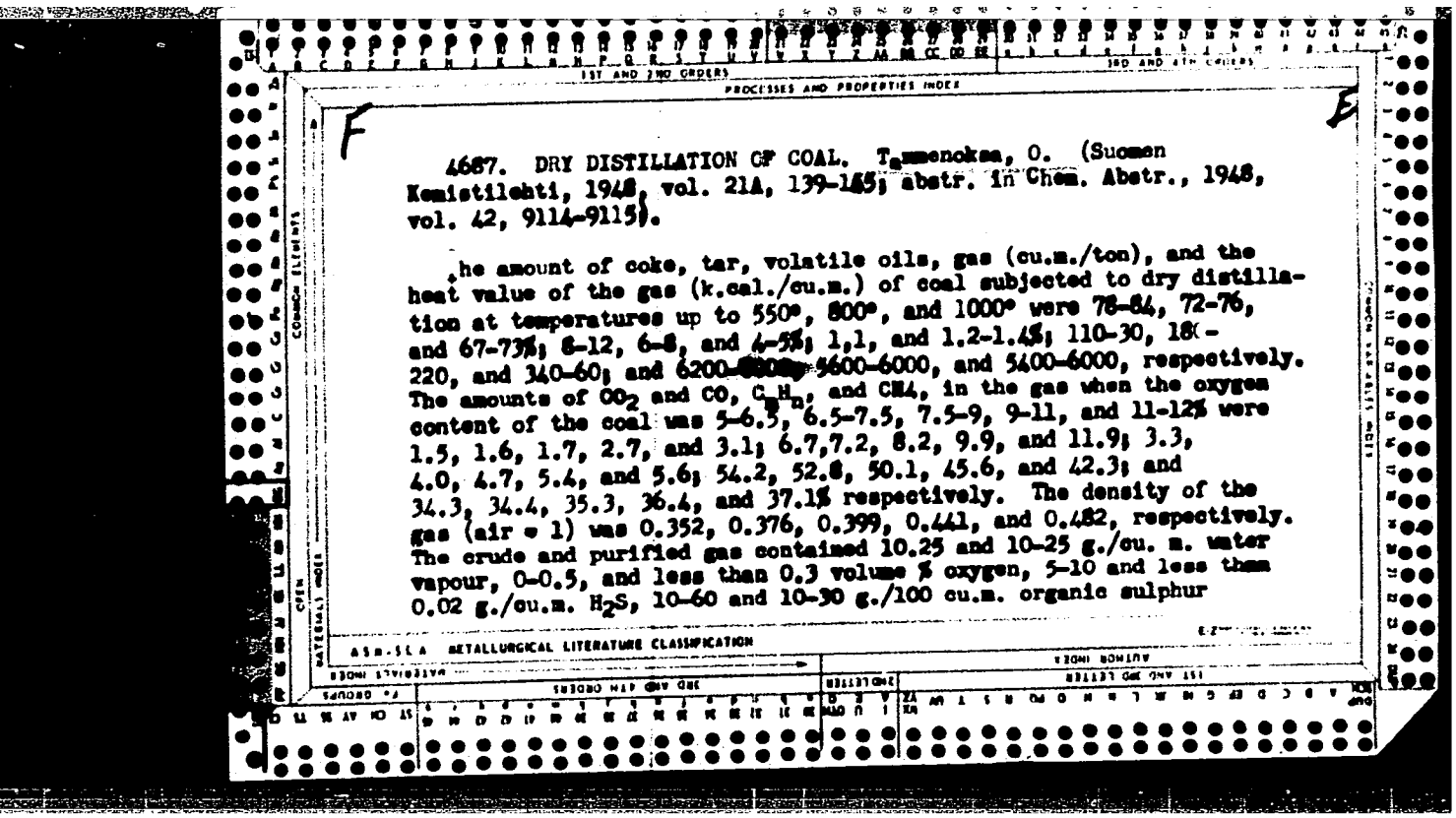

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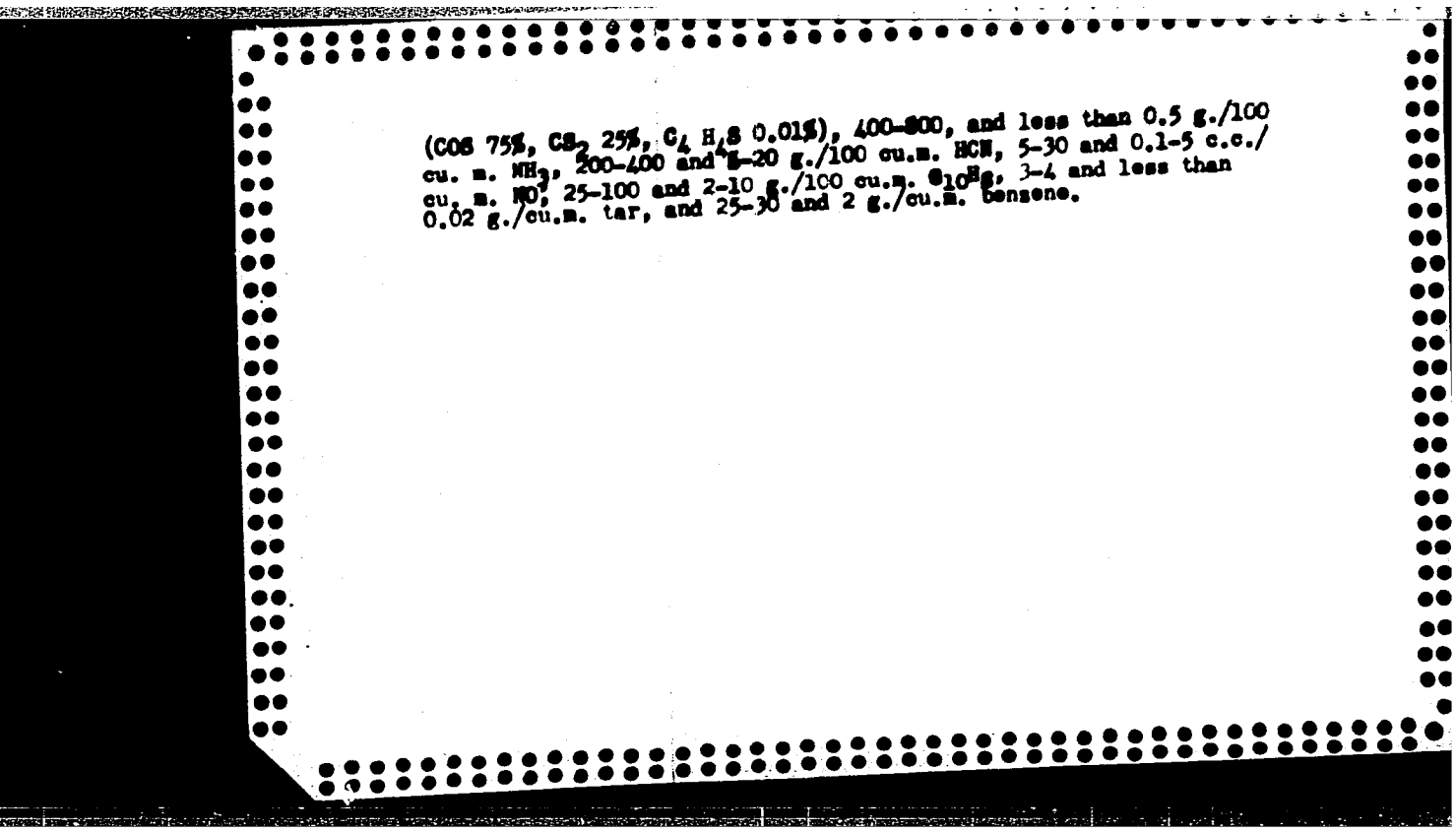
4687. DRY DISTILLATION OF COAL. Tammenoksa, O. (Suomen Kemistilehti, 1948, vol. 21A, 139-145; abstr. in Chem. Abstr., 1948, vol. 42, 9114-9115).

The amount of coke, tar, volatile oils, gas (cu.m./ton), and the heat value of the gas (k.cal./cu.m.) of coal subjected to dry distillation at temperatures up to 550°, 800°, and 1000° were 78-84, 72-76, and 67-73%; 8-12, 6-8, and 4-5%; 1,1, and 1.2-1.4%; 110-30, 18(-220, and 340-60; and 6200-[illegible] 5600-6000, and 5400-6000, respectively. The amounts of CO_2 and CO, C_nH_n, and CH_4, in the gas when the oxygen content of the coal was 5-6.5, 6.5-7.5, 7.5-9, 9-11, and 11-12% were 1.5, 1.6, 1.7, 2.7, and 3.1; 6.7,7.2, 8.2, 9.9, and 11.9; 3.3, 4.0, 4.7, 5.4, and 5.6; 54.2, 52.8, 50.1, 45.6, and 42.3; and 34.3, 34.4, 35.3, 36.4, and 37.1% respectively. The density of the gas (air = 1) was 0.352, 0.376, 0.399, 0.441, and 0.482, respectively. The crude and purified gas contained 10.25 and 10-25 g./cu. m. water vapour, 0-0.5, and less than 0.3 volume % oxygen, 5-10 and less than 0.02 g./cu.m. H_2S, 10-60 and 10-30 g./100 cu.m. organic sulphur



(COS 75%, CS_2 25%, C_4H_4S 0.01%), 400-800, and less than 0.5 g./100 cu. m. NH_3, 200-400 and 5-20 g./100 cu.m. HCN, 5-30 and 0.1-5 c.c./cu. m. NO, 25-100 and 2-10 g./100 cu.m. $C_{10}H_8$, 3-4 and less than 0.02 g./cu.m. tar, and 25-30 and 2 g./cu.m. benzene.

TAMMEORG, I. K.

Botany-Medical

Pharmacognostic characteristics of various species of the Equisetaceae family. Apt. delo no. 4, 1952.

Monthly List of Russian Accessions, Library of Congress, November 1952. UNCLASSIFIED.

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001754820002-2"

TAMEPYLD, E. K.

TAMEPYLD, E. K. — "A Comparative Investigation of Hemagglutination, Hemolysis and Vidal' Reaction in the Diagnosis of Typhoid Fever." Tartu State U, Tartu, 1956. (Dissertation for the Degree of Candidate in Medical Sciences.)

KNIZHNAYA LETOPIS
No. 41, October 1956

66701

28.5000, 24.2120 SOV/109-4-8-21/35

AUTHORS: Reynet, Ya.Yu., Tammet, Kh.F. and Val't, L.O.

TITLE: Methods of Unipolar Ionisation of Air by Means of Aero-ionisers

PERIODICAL: Radiotekhnika i elektronika, 1959, Vol 4, Nr 8, pp 1335 - 1338 (USSR)

ABSTRACT: The aim of this article is to give a short review of the methods of aero-ionisation and to describe the work of the Kafedra fiziki Tartuskogo gosudarstvennogo universiteta (Physics Chair of Tartu State University) in this field. The aero-ionisation finds the following applications. The uni-polarly ionised air is used for inhalation in medecine for therapeutic purposes. Secondly, the artificial ionisation of air is employed in industry for the elimination of obnoxious static electric charges. Thirdly, it is employed for the acceleration of the condensation of aerosols, which is of importance in industry, agriculture and medicine. The air inside a closed space can be ionised by means of a special ioniser which produces unipolar ions; these are propelled

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Methods of Unipolar Ionisation of Air by Means of Aero-ionisers

into the space by diffusion, electric fields or by convection. The ionisers should usually meet the following requirements;
1) a high ionisation capacity;
2) ability to produce unipolar ions (normally negative ones);
3) absence of unpleasant accompanying phenomena (noise, wind, ozone, etc.) and, 4) simplicity, small dimensions and long life.
One of the best-known ionisers is the corona-type ioniser. The laboratory of Tartu University has constructed such an ioniser. The high voltage in this device was obtained by means of a small high-frequency rectifier. The ions were removed from the device by means of an air stream produced by a fan. The ioniser was mounted into a cylindrical body having a diameter of 5 cm and length of 14 cm. The device could be inserted into a normal electric-bulb adaptor. The ioniser consumed a negligible power and gave an ion concentration of 6×10^5 charges/cm^2 at

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SOV/109-4-8-21/35

Methods of Unipolar Ionisation of Air by Means of Aero-ionisers

a distance of 20 cm. A thermo-ioniser has also been constructed by the laboratory; this was based on a nichrome wire which was heated to a temperature of 1 000 °C; the wire was given a potential of 500 V. The ionising capacity of the thermo-ionisers is lower than that of the corona-ionisers but their advantage lies in the fact that they produce no biologically active gases. It is also possible to devise radioactive and ultraviolet ionisers but these have not been studied thoroughly, The problem of the charging of aerosols was investigated by means of an inhaler-ioniser and an aerosol hydrogen ioniser constructed at the laboratory. These devices employed a Bergson-Barkovskiy pulveriser. By means of the inhaler-ioniser, it was possible to obtain the ratio of the average charge to the mass of the charge droplets of the order of 1.5×10^4 electrostatic units CGSE/g.
There are 1 table and 2 Soviet references.

SUBMITTED: March 5, 1959

Card 3/3

Tammet, Kh. F.

PHASE I BOOK EXPLOITATION SOV/4316
SOV/2-S-97

Leningrad. Glavnaya geofizicheskaya observatoriya

Voprosy atmosfernogo elektrichestva (Problems in Atmospheric Electricity) Leningrad, Gidrometeoizdat, 1960. 115 p. (Series: Its: Trudy, vyp. 97) Errata slip inserted. 1,000 copies printed.

Sponsoring Agency: USSR. Glavnoye upravleniye gidrometeorologicheskoy sluzhby.

Ed. (Title page): I.M. Imyanitov, Candidate of Physics and Mathematics; Ed. (Inside book): T.V. Ushakova; Tech. Ed.: N.V. Volkov.

PURPOSE: This publication is intended for meteorologists and scientists concerned with the problem of atmospheric electricity. The book can also be used by graduate students at hydrometeorological institutes and by university students studying physics of the atmosphere.

COVERAGE: This issue of the Transactions of the Main Geophysical Observatory im. A.I. Voyeykov contains works on problems in atmospheric electricity written from 1954 to 1958. Individual articles deal with the electrical phenomena associated with thunderstorms, clouds, rains, and fogs. Observational techniques and instruments used are described. No personalities are mentioned. References accompany individual articles.

AVAILABLE: Library of Congress

Card 4/4

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E201/E191

AUTHOR: Tammet, Kh.F.

TITLE: A Contribution to the Theory of Aspirator-type Counters of Atmospheric Ions

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya geofizicheskaya, 1960, No. 8, pp.1263-1270

TEXT: Aspirator counters of atmospheric ions are widely used to study the state of ionization of the atmosphere. The classical theory of aspiration counters (Refs 1-3) is valid only for cylindrical or parallel-plate capacitors although real capacitors used in these counters are not always of these shapes. The present paper gives a more general and more rigorous theory. The new theory is independent of the configuration of the electric field, provided it is axisymmetric, and of the distribution of air flow velocities in the counter capacitor. The theory of integral counters is supplemented by a theory of differential aspirators. The paper is entirely theoretical.
There are 5 references: 1 Soviet, 2 English and 2 German.

ASSOCIATION: Tartuskiy gosudarstvennyy universitet (Tartu State University)

SUBMITTED: February 1, 1960

Card 1/1

TAMMET, Kh.F.

Distortional effects in aspiration counters of air ions. Izv. AN SSSR. Ser. geofiz. no.6:845-853 Je '62. (MIRA 15:6)

1. Tartuskiy gosudarstvennyy universitet.
(Ions--Migration and velocity)